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## ABSTRACT

A sensor designed for measurement of conducted heat flux passing through a solid object consists of a thin film thermopile deposited on a planar substrate whose thermal properties match those of the solid object. The thermopile is protected by a thin rectangular plate made of the same material as the substrate. The sensor is imbedded in the solid object and measures the vector of heat flux along the thermopile axis with minimal distortion of the heat flow pattern. Applications include measurement of heat flux in casting molds, boiler tubes, well surveying instruments and laser weapons testing.